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ABSTRACT

Designed to instruct both elementary school teachers and students in the practical use of computers, this manual contains 20 sample drill and practice examples of computer aided instructional programs. The programs were written using a TRS-80 Model III microcomputer, but can be adapted to most other microcomputers that utilize the BASIC language. The manual begins with an introduction to the programs, including simple suggestions for starting up the computer, inputting information and saving it, and the use of commands such as NEW, RUN/STOP, SAVE, and HOME. The sample programs include title, purpose of instruction, and a print-out of line numbers, text, and commands for inputting the program. Program titles are: Missing Letters; Guess the Letter; Alphabetical Order--Letters; Alphabetical Order--Beginnings; Alphabetical Order--Words; Ending Sounds; Capitalization; Spelling Test; Punctuation; Addition Practice; Subtraction Practice; Multiplication Practice; Division Practice; Greater Than/Less Than; Reducing Fractions; Fraction Conversion; Grouping Vertebrates; History Sequences; Presidents; and States and Capitols. (JB)

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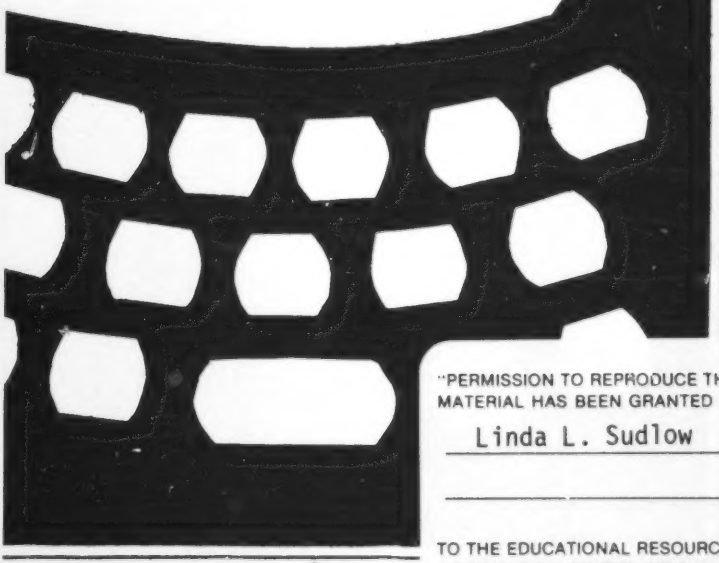
CLASSROOM COMPUTER AIDE

BEST COPY AVAILABLE

ESPECIALLY FOR ELEMENTARY TEACHERS JUST GETTING STARTED WITH MICROCOMPUTERS

PREPARED BY L. SUDLOW
1984



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C L A S S R O O M

C O M P U T E R

A I D E

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GETTING STARTED

Welcome to the wonderful world of computing. If you are like many other classroom teachers, you may have a new computer and some programs and textbooks, but you wish to learn a little about how programming works. You may want to have some programs that you can use to demonstrate the educational value of a computer.

The programs in this book are samples of computer aided instruction (CAI). They are the simple "drill and practice" type. They allow the teacher and student to use the computer in a practical manner that they both understand. Do not judge all CAI software (programs) by these, as they are very simple and limited. But, please use these if you have nothing else and want to get started.

The programs contained in this booklet were written using a TRS-80 Model III but have been designed to be adapted to most other microcomputers that use the BASIC language.

If you wish to save any of these programs, you will need either a diskette or cassette tape on which to record your typing. Otherwise, you will lose the program whenever you turn the machine off, and will have to type in the program every time you want to use it.

The first step is to turn on your machine and get into the BASIC language. Most microcomputers do that automatically as you turn the machine on. Apple type microcomputers need a disk in the drive before you turn it on. Disk operated TRS-80s need to be turned on first, then the disk inserted, the date and time entered, the word BASIC typed, and then you press the <enter> key until the screen says READY. Cassette TRS-80s only need to be turned on and <enter> touched twice. Color Computers and Commodores may or may not have a disk. Just turn them on. TIs seldom have disk drives, just turn them on.

When we say to touch the <enter> key, you should realize that it is marked <return> on the Apple and some other machines. The "prompt" is a word or mark that says that the computer is ready to accept new information. With the TRS-80 III, it is the word READY. The Color Computer uses OK, and the Apple uses a reverse bracket (]).

Before typing in any program, you should type the word NEW and touch the <enter> or <return> key. This will erase any programs that may be in the memory. Go ahead and type in one of the programs. Check your typing carefully. A misplaced colon, a missing quotation mark, etc. can really foul you up. Don't forget to touch the <enter> or <return> key after you have finished each line. Don't use the arrows except to back-space on some machines. If you want to make a correction after you have finished typing a line and have touched <enter>, retype the entire line, beginning with the line number. This is the easiest way to edit lines with errors. It doesn't matter if you type the line out of order. The computer knows how to count and when you tell it to LIST your program, you will find out that it put the new line right where it belongs, replacing the old line.

When you have finished typing the program, try it. Type RUN after the prompt. If it doesn't run correctly, go back and find the error. If you want to stop running a program, press the BREAK key on the TRS-80, the RUN/STOP key on the Commodore, the f-CLEAR key on the TI or the CTRL and the C keys on the Apple.

If the program is correct, you may want to save it for future use. For disk-operated TRS-80s and Color Computers, think of a name for the program (shorter than 8 characters and starting with a letter) and type SAVE "name" and touch the <enter> key. The name of your progam should have (") quote marks around it. Don't use a name that you've already used for a previous program, or the computer will save this one in the same place and erase the old one. Commodores have to have a ,8 after the name in order to put it on the disk. For example, SAVE "name",8.

Apples save programs almost the same way except you do not put (") quote marks around the name. For example, SAVE name. For computers with cassette players, put a blank cassette in the tape recorder making sure you have wound the tape past the clear or colored leader at the very beginning of the tape. Set the volume control as your computer book suggests. Depress the <play> and <record> buttons on the tape recorder. On the TRS-80 and Color Computer, type CSAVE "A" or some other letter, and touch <enter>. Commodores are simple. Use SAVE "name".

Programs that have been saved on disk can be loaded back into the computer's memory tomorrow or next month, by just typing LOAD "name" when the correct disk is in the disk drive. (Apple users don't use the quotes.)

Programs on tape are loaded by placing the correct tape, rewound to the correct place, in the tape recorder, depressing the <play> button and then typing CLOAD for the TRS-80s, and touching <enter>. For Commodore use LOAD "name".

For more complete information on how to save and load programs with your computer, read the manual that came with your computers.

These programs have been designed for a screen size of 32 characters. They should operate on any of the popular computers in schools except for the VIC 20. It has fewer characters per line, and we haven't worried about it. The major difference between computers is in the BASIC command they use to clear the screen. These programs have the command CLS used to clear the screen. Apples use the command HOME, Commodore uses the CLR/HOME key and TI uses CALL CLEAR. When you are typing the programs in this booklet, make the above change if you have a machine other than the TRS-80s.

Note for Model III/4 users only: The TRS-80 Model III/4 normally has 64 characters across the screen. If you want to double their size (as these programs were designed) use the double command CLS:PRINT CHR$(23). This clears the screen and enlarges the characters to 32 characters per line.

Good luck. If you have any problems or have suggestions for the improvement of this booklet, please let us know.

MISSING LETTERS

An alphabet appears on the screen with one letter missing. The student then types in the missing letter.

```
20 REM MISSING LETTER OF ABC'S
30 REM 1984, LYN SUDLOW
40 C=0:W=0
50 CLS
60 C=C+1
70 PRINT:PRINT C
80 PRINT
90 R=RND(26)+64
100 FOR X=65 TO 90
110 IF X=R THEN PRINT " ";:GOTO 130
120 PRINT CHR$(X);
130 NEXT X
140 PRINT:PRINT:PRINT
150 PRINT"WHAT LETTER IS MISSING ";
160 INPUT G$
170 PRINT
180 IF G$=CHR$(R) THEN PRINT "VERY GOOD !!!":GOTO 200
190 W=W+1:PRINT "NO, IT WAS ";CHR$(R)
200 IF C=10 THEN 230
210 PRINT:INPUT"PLEASE TOUCH ENTER TO CONTINUE";A$
220 GOTO 50
230 PRINT:PRINT"YOU GOT "10-W" RIGHT OUT OF 10."
240 INPUT "DO YOU WANT TO TRY AGAIN";Y$
250 IF LEFT$(Y$,1)="Y" THEN GOTO 40
260 PRINT:PRINT"THANK YOU."
270 END
```

GUESS THE LETTER

This program will help students learn alphabetical order through a guessing game. The computer randomly picks a letter, the student guesses what it is, and is then told if the letter guessed is before or after the letter the computer chose.

```
20 REM GUESS THE LETTER
30 REM  1984 LYN SUDLOW
40 CLS
50 PRINT"I AM THINKING OF A LETTER."
60 PRINT
70 PRINT : PRINT "LET'S SEE HOW MANY TIMES"
80 PRINT"IT TAKES YOU TO GUESS IT."
90 T=0
100 N=INT(26*RND(0)):L=N+65
110 PRINT:INPUT"WHAT IS THE LETTER ";G$
120 T=T+1
130 IF G$=CHR$(L) THEN PRINT:PRINT"YOU GOT IT!":PRINT"IT TOOK YOU "T" TRI
ES."
140 IF G$>CHR$(L) THEN PRINT"IT COMES BEFORE THAT LETTER.":GOTO 110
150 IF G$<CHR$(L) THEN PRINT "IT COMES AFTER THAT LETTER.":GOTO 110
160 INPUT "DO YOU WANT TO TRY AGAIN";Y$
170 IF LEFT$(Y$,1)="Y" THEN PRINT:PRINT:GOTO 40
180 PRINT:PRINT "THANK YOU
190 END
```

ALPHABETICAL ORDER -- LETTERS

Three letters at a time will appear on the screen and the student must type these same letters, but in the correct alphabetical order.

```
20 REM ALPHABETICAL ORDER - LETTERS
30 REM  1984, LYN SUDLOW
40 CLS
50 PRINT "LET'S PUT SOME LETTERS IN ORDER."
60 PRINT "(PLEASE PUT A ',' COMMA
70 PRINT "BETWEEN LETTERS.)"
80 C=0
90 FOR X=1 TO 10
100 READ A$,B$,C$,D$,E$,F$
110 PRINT:PRINT A$","B$","C$" "
120 INPUT G$,H$,I$
130 IF G$<>D$ THEN PRINT"TRY AGAIN":W=W+1:GOTO 120
140 IF H$<>E$ THEN PRINT"TRY AGAIN":W=W+1:GOTO 120
150 IF I$<>F$ THEN PRINT"TRY AGAIN":W=W+1:GOTO 120
160 PRINT"YOU GOT IT!"
170 NEXT X
180 PRINT "YOU GOT";10-W;"CORRECT OUT OF 10."
190 INPUT"DO YOU WANT TO PLAY AGAIN ";Y$
200 IF LEFT$(Y$,1)="Y" THEN RESTORE :PRINT:PRINT:GOTO 40
210 PRINT:PRINT"GOOD-BY."
220 END
230 DATA B,D,A,A,B,D,E,G,L,E,G,L,K,Y,Z,K,Y,Z,R,P,V,P,R,V,S,C,T,C,S,T
240 DATA Q,J,F,F,J,Q,I,M,N,I,M,N,B,A,F,A,B,F,R,E,Y,E,R,Y,O,F,D,D,F,O
```

ALPHABETICAL ORDER -- BEGINNINGS

Three groups of letters appear and the student must type the groups in correct alphabetical order.

```
20 REM ALPHABETICAL ORDER-BEGINNINGS
30 REM  1984, LYN SUDLOW
40 CLS
50 PRINT"LET'S PUT SOME SETS"
60 PRINT"OF LETTERS IN ORDER."
70 DATA CHA,CHR,CHE,CHA,TRE,TRA,THR,THR,BEY,BRA,BAY,BAY
80 DATA CAR,CAT,CAL,CAL,DRE,DRA,DOL,DOL,FEB,FAB,FIT,FAB
90 DATA TAP,TAE,TAB,TAB,MAC,MAT,MAR,MAC,STE,STA,SHE,SHE
95 DATA PRI,PRA,PRE,PRA
100 PRINT:PRINT"CHOOSE THE SET THAT SHOULD"
110 PRINT"COME FIRST."
120 C=0
130 FOR X=1 TO 10
140 READ A$,B$,C$,D$
150 PRINT:PRINT A$",";B$",";C$" "
160 INPUT G$
170 IF G$<>D$ THEN PRINT"TRY AGAIN":W=W+1: GOTO 160
180 PRINT "YOU GOT IT!!!"
190 NEXT X
200 PRINT:PRINT"YOU GOT";10-W;"CORRECT OUT OF 10."
210 IF W<3 THEN PRINT"YOU DID A VERY GOOD JOB!"
220 INPUT "DO YOU WANT TO TRY AGAIN";Y$
230 IF LEFT$(Y$,1)="Y" THEN RESTORE:GOTO 40
240 PRINT:PRINT "GOOD-BY"
250 END
```

ALPHABETICAL ORDER -- WORDS

Groups of three words with similar beginnings must be typed in correct alphabetical order.

```
20 REM ALPHABETICAL ORDER-WORDS
30 REM  1984 LYN SUDLOW
40 CLS
50 PRINT"LET'S PUT SOME WORDS IN ORDER."
60 DATA TRAIN,TRUCK,TRACTOR,TRAILER,TRACTOR
70 DATA MOON, MONTH,MOUSE,MONKEY,MONKEY
80 DATA SHOW,SHOWER,SHOP,SHOPPER,SHOP
90 DATA CHECKERS,CHEESE,CHILDREN,CHIN,CHECKERS
100 DATA TAKE,TEN,TRICK,TOKEN,TAKE
110 DATA BRAKE,BOOK,BEST,BAKE,BAKE
120 DATA LIMIT,LOOK,LAST,LEAST,LAST
130 DATA COLOR,CAN,COOK,CREAM,CAN
140 DATA CHASE,CHAIN,CHAIR,CHAMBER,CHAIN
150 DATA BOOK,BOAT,BOSTON,BUSINESS,BOAT
160 PRINT "CHOOSE THE WORD THAT WOULD COME FIRST"
170 W=0
180 FOR X=1 TO 10
190 READ A$,B$,C$,D$,E$
200 PRINT:PRINT A$", ";B$", ";C$", ";D$
210 INPUT G$
220 IF G$<>E$ THEN PRINT "TRY AGAIN":W=W+1:GOTO 210
230 PRINT"YOU GOT IT!!!"
240 NEXT X
245 PRINT
250 PRINT "YOU GOT";10-W;"CORRECT OUT OF 10."
260 IF W<2 THEN 280
270 PRINT"I THINK YOU NEED MORE PRACTICE.":GOTO 290
280 PRINT"YOU DON'T NEED MORE PRACTICE."
290 INPUT"WOULD YOU LIKE TO TRY AGAIN";Y$
300 IF LEFT$(Y$,1)="Y" THEN RESTORE:GOTO 40
310 PRINT:PRINT"GOOD-BY."
320 END
```

ENDING SOUNDS

Words with similar endings appear on the screen and the student must pick out the word that has a different ending from the others.

```
20 REM ENDING SOUNDS
30 REM  1984, LYN SUDLOW
40 CLS:
50 PRINT:PRINT "WE ARE GOING TO WORK ON"
60 PRINT "ENDING SOUNDS"
70 W=0
80 DATA BAT,VAT,CAT,LET,LET,JET,LET,PAT,GET,PAT
90 DATA HAT,SAT,HIT,PAT,HIT,PIT,KNIT,SIT,SHIP,SHIP
100 DATA HOT,BAT,SHOT,LOT,BAT,TRIP,SHIP,CLIP,FLIT,FLIT
110 DATA CRIB,FIB,BIB,GRIP,GRIP,SET,KNEE,TREE,FREE,SET
120 DATA SACK,CRACK,TRAP,TRACK,TRAP,CLOAK,BOOK,LOOK,TOOK,CLOAK
130 FOR Y=1 TO 10
140 READ A$,B$,C$,D$,E$
150 PRINT:PRINT"TYPE THE WORD THAT"
160 PRINT"DOES NOT BELONG"
170 PRINT:PRINT A$;"  ";B$;"  ";C$;"  ";D$
180 INPUT G$
190 IF E$<>G$ THEN PRINT:PRINT"NO, IT WAS "E$:W=W+1:GOTO 220
200 PRINT:PRINT "GOOD! "
220 NEXT Y
230 PRINT"YOU GOT";10-W;"CORRECT OUT OF 10."
240 INPUT "DO YOU WANT TO TRY AGAIN ";Y$
250 IF LEFT$(Y$,1)="Y" THEN RESTORE: GOTO 40
260 PRINT:PRINT"GOOD-BY."
270 END
```

CAPITALIZATION

Can students tell the difference between a proper noun that should be capitalized and common nouns that shouldn't? This program will give them some practice.

```
20 REM CAPITALIZATION-WORDS
30 REM  1984. LYN SUDLOW
40 CLS
50 PRINT:PRINT"CAPITALIZATION PRACTICE-WORDS"
60 PRINT:PRINT"REMEMBER TO CAPITALIZE ALL"
70 PRINT"PROPER NOUNS."
80 DATA car,NO,number,NO,ford,YES,jane,YES,box,NO,dr.,YES,truck,NO
90 DATA kevin,YES,maine,YES,portland,YES,table,NO,then,NO,first,NO
100 DATA ten,NO,anne,YES,christmas,YES,month,NO,april,YES,paper,NO,sunda
y,YES
110 C=0
120 FOR X=1 TO 20
130 READ W$,W2$
140 PRINT:PRINT"SHOULD THIS WORD BE"
150 PRINT"CAPITALIZED?"
160 PRINT:PRINT W$;
170 INPUT Y$
180 IF LEFT$(Y$,1)=LEFT$(W2$,1) THEN PRINT "RIGHT !":C=C+1:FOR K=1 TO 50
0:NEXT K:GOTO 200
190 PRINT"YOU SHOULD HAVE SAID "W2$:FOR J=1 TO 500:NEXT J
200 NEXT X
210 PRINT:PRINT"YOU GOT "C;"CORRECT OUT OF 20."
220 INPUT"DO YOU WANT TO TRY AGAIN";Y$
230 IF LEFT$(Y$,1)="Y" THEN RESTORE:GOTO 110
240 END
```

LANGUAGE ARTS ELEMENTARY

SPELLING TEST

You type in up to 20 spelling words for your students to practice. Remember, if you turn off the computer or load a new program, or type "RUN" after breaking, the computer will forget the words.

```
20 REM SPELLING DRILL
30 REM 1984 LYN SUDLOW
40 CLEAR 200
50 CLS
60 DIM W$(20),W(20),M$(20)
70 PRINT"YOU MAY ENTER UP TO 20 SPELLING"
80 PRINT"WORDS THAT YOU WOULD LIKE TO"
90 PRINT"STUDY."
100 PRINT:PRINT"AFTER EACH ? TYPE IN A WORD."
110 PRINT:PRINT"TYPE THE WORD 'END' WHEN DONE."
120 PRINT "(OR TYPE 'X' TO START OVER.)"
130 C=0:W=0
140 FOR X=1 TO 20
150 PRINT X;". ";:INPUT W$(X)
160 IF W$(X)="END" THEN 200
170 IF W$(X)="X" THEN 40
180 C=C+1
190 NEXT X
200 CLS:PRINT                "HERE IS YOUR LIST. STUDY IT.
210 PRINT
220 FOR X=1 TO C STEP 2
230 PRINT W$(X);TAB(20);W$(X+1)
240 NEXT X
250 PRINT:PRINT:INPUT"TOUCH <ENTER> WHEN READY";Y$
260 FOR X=1 TO C
270 CLS
280 PRINT W$(X)
290 FOR L=1 TO 300:NEXT L:CLS:PRINT CHR$(23)
300 FOR L=1 TO 500:NEXT L
310 INPUT "TYPE THE WORD";G$
320 IF G$=W$(X) THEN PRINT "RIGHT!!!":FOR M=1 TO 1000:NEXT:GOTO 360
330 W=W+1
340 LET M$(X)=W$(X)
350 PRINT:PRINT"NO, IT IS "W$(X):FOR M=1 TO 1200:NEXT M
360 NEXT X
370 PRINT:PRINT"YOU GOT";C-W;"CORRECT OUT OF";C
380 IF W>0 PRINT"YOU NEED TO PRACTICE: " ELSE GOTO 400
390 FOR X=1 TO C:PRINT M$(X):NEXT X
400 INPUT"WOULD YOU LIKE TO STUDY MORE";Y$
410 IF LEFT$(Y$,1)="Y" THEN 200
420 PRINT "GOOD-BY FOR NOW"
430 END
```

PUNCTUATION

After presenting the rules of ending punctuation, this program will print a sentence and then ask for the punctuation that should complete it.

```
20 REM PUNCTUATION
30 REM 1984, LYN SUDLOW
40 CLS:PRINT        "PUNCTUATION PRACTICE"
50 FOR I=1 TO 500:NEXT I
60 C=0
70 PRINT:PRINT"Sentences that state facts "
80 PRINT"end in periods (.)."
90 PRINT:PRINT"  Example: I have a new dog."
100 PRINT:PRINT:PRINT:PRINT:PRINT"Press <ENTER> to go on";:INPUT X$
110 CLS:PRINTCHR$(23)
120 PRINT:PRINT"Sentences that ask qustions"
130 PRINT"end in qustion marks (?)."
140 PRINT:PRINT"   Example: Are you going away?"
150 PRINT:PRINT:PRINT:PRINT:PRINT"PRESS <ENTER> TO GO ON";:INPUT X$
160 CLS:PRINT CHR$(23)
170 PRINT:PRINT"Sentences that show surprise"
180 PRINT"or strong emotion end with"
190 PRINT"exclamation points (!)."
200 PRINT:PRINT"   Example: We won!"
210 PRINT:PRINT:PRINT:PRINT:PRINT"PRESS <ENTER> TO GO ON";:INPUT X$
220 CLS:PRINT CHR$(23)
230 PRINT"Which ending mark would you use after "
240 PRINT"each of these sentences: "
250 PRINT
260 FOR I=1 TO 6:READ A$(I),B$(I):NEXT I
270 FOR I=1 TO 6
280   PRINT A$(I):INPUT G$
290   IF G$=B$(I) THEN PRINT "GOOD!":GOTO 310
300   PRINT "TRY AGAIN": C=C+1:GOTO 280
310 PRINT:NEXT I
320 PRINT:PRINT"You got "C" wrong."
330 IF C=0 THEN 360
340 PRINT" Let's try again."
350 FOR J=1 TO 1000:NEXT J:RESTORE:GOTO 10
360 PRINT"I'm glad you understand this."
370 DATA Are you studying,?,I want to type it,.
380 DATA Not another test,!,Is the computer slow,?
390 DATA I am reading a good story,.,What a great idea,!,
```

ADDITION PRACTICE

The following four programs are simple math drill of the four major operations. Easy problems use single digit numbers. Problems of medium difficulty use one single digit number and one double digit. Hard problems use two double digit numbers.

```
20 REM ADDITION PRACTICE
30 REM 1984, LYN SUDLOW
40 CLS
50 C=0
60 PRINT "ADDITION PRACTICE"
70 PRINT"(USE PAPER AND PENCIL ALSO.)
80 PRINT:PRINT"WOULD YOU LIKE TO TRY PROBLEMS"
90 PRINT"THAT ARE:"
100 PRINT"   A. EASY"
110 PRINT"   B. MEDIUM"
120 PRINT"   C. HARD"
130 PRINT"CHOOSE A, B, OR C";
140 INPUT Y$
150 FOR X=1 TO 10
160 IF Y$="A" THEN A=INT(10*RND(0)):B=INT(10*RND(0)):GOTO 200
170 IF Y$="B" THEN A=INT(100*RND(0)):B=INT(10*RND(0)):GOTO 200
180 IF Y$="C" THEN A=INT(100*RND(0)):B=INT(100*RND(0)):GOTO 200
190 GOTO 80
200 PRINT:PRINT "#";X:PRINT A;"+";B;"=";
210 INPUT D
220 IF D=A+B THEN PRINT "RIGHT!":C=C+1:GOTO 240
230 PRINT "NO, IT SHOULD BE";A+B
240 NEXT X
250 PRINT"YOU GOT";C;"CORRECT OUT OF 10."
260 INPUT "WOULD YOU LIKE TO TRY AGAIN";Y$
270 IF LEFT$(Y$,1)="Y" THEN 80
280 PRINT " GOOD-BY":END
```

SUBTRACTION PRACTICE

```
20 REM SUBTRACTION PRACTICE
30 REM  1984, LYN SUDLOW
40 CLS
50 C=0
60 PRINT "SUBTRACTION PRACTICE"
70 PRINT"(USE PAPER AND PENCIL ALSO.)
80 PRINT:PRINT"WOULD YOU LIKE TO TRY PROBLEMS"
90 PRINT"THAT ARE:"
100 PRINT"   A. EASY"
110 PRINT"   B. MEDIUM"
120 PRINT"   C. HARD"
130 PRINT"CHOOSE A, B, OR C";
140 INPUT Y$
150 FOR X=1 TO 10
160 IF Y$="A" THEN A=INT(10*RND(0)):B=INT(10*RND(0)):IF B>A THEN 160  :E
LSE 200
170 IF Y$="B" THEN A=INT(100*RND(0)):B=INT(10*RND(0)):IF B>A THEN 170  :
ELSE 200
180 IF Y$="C" THEN A=INT(100*RND(0)):B=INT(100*RND(0)):IF B>A THEN 180
:ELSE 200
190 GOTO 80
200 PRINT:PRINT "#";X:PRINT A;"-";B;"=";
210 INPUT D
220 IF D=A-B THEN PRINT "RIGHT!":C=C+1:GOTO 240
230 PRINT "NO, IT SHOULD BE";A-B
240 NEXT X
250 PRINT"YOU GOT";C;"CORRECT OUT OF 10."
260 INPUT "WOULD YOU LIKE TO TRY AGAIN";Y$
270 IF LEFT$(Y$,1)="Y" THEN 40
280 PRINT " GOOD-BY":END
```

MULTIPLICATION PRACTICE

Multiplication and Division problems require the answer only, and ignore the intermediate steps. Students should use pencil and paper to work problems that are not sight recognizable.

```
20 REM MULTIPLICATION PRACTICE
30 REM  1984, LYN SUDLOW
40 CLS
50 C=0
60 PRINT "MULTIPLICATION PRACTICE"
70 PRINT "(USE PAPER AND PENCIL ALSO.)
80 PRINT:PRINT"WOULD YOU LIKE TO TRY PROBLEMS"
90 PRINT"THAT ARE:"
100 PRINT"   A. EASY"
110 PRINT"   B. MEDIUM"
120 PRINT"   C. HARD"
130 PRINT"CHOOSE A, B, OR C";
140 INPUT Y$
150 FOR X=1 TO 10
160 IF Y$="A" THEN A=INT(10*RND(0)):B=INT(10*RND(0)):GOTO 200
170 IF Y$="B" THEN A=INT(100*RND(0)):B=INT(10*RND(0)):GOTO 200
180 IF Y$="C" THEN A=INT(100*RND(0)):B=INT(100*RND(0)):GOTO 200
190 GOTO 80
200 PRINT:PRINT "#";X:PRINT A;"x";B;"=";
210 INPUT D
220 IF D=A*B THEN PRINT "RIGHT!":C=C+1:GOTO 240
230 PRINT "NO, IT SHOULD BE";A*B
240 NEXT X
250 PRINT:PRINT"YOU GOT";C;"CORRECT OUT OF 10."
260 INPUT "WOULD YOU LIKE TO TRY AGAIN";Y$
270 IF LEFT$(Y$,1)="Y" THEN 40
280 PRINT " GOOD-BY":END
```

DIVISION PRACTICE

```
20 REM DIVISION PRACTICE
30 REM  1984, LYN SUDLOW
40 CLS
50 C=0
60 PRINT "DIVISION PRACTICE"
70 PRINT"(USE PAPER AND PENCIL ALSO.)
80 PRINT:PRINT"WOULD YOU LIKE TO TRY PROBLEMS"
90 PRINT"THAT ARE:"
100 PRINT"   A. EASY"
110 PRINT"   B. MEDIUM"
120 PRINT"   C. HARD"
130 PRINT"CHOOSE A, B, OR C";
140 INPUT Y$
150 FOR X=1 TO 10
160 IF Y$="A" THEN A=INT(10*RND(0)):B=INT(10*RND(0)):GOTO 200
170 IF Y$="B" THEN A=INT(100*RND(0)):B=INT(10*RND(0)):GOTO 200
180 IF Y$="C" THEN A=INT(100*RND(0)):B=INT(100*RND(0)):GOTO 200
190 GOTO 80
200 IF B=0 THEN GOTO 160
210 E=A*B
220 PRINT:PRINT "#";X:PRINT E;"/";B;"=";
230 INPUT D
240 IF D=A THEN PRINT "RIGHT!":C=C+1:GOTO 260
250 PRINT "NO, IT SHOULD BE";A
260 NEXT X
270 PRINT:PRINT"YOU GOT";C;"CORRECT OUT OF 10."
280 INPUT "WOULD YOU LIKE TO TRY AGAIN";Y$
290 IF LEFT$(Y$,1)="Y" THEN 40
300 PRINT " GOOD-BY":END
```

GREATER THAN / LESS THAN

Guess the number that the computer has chosen. Students will be told if they have guessed too high or too low.

```
20 REM GREATER THAN/LESS THAN
30 REM LYN SUDLOW, 1984
40 CLS
50 PRINT"THIS IS A NUMBER GUESSING GAME."
60 PRINT "I AM GOING TO THINK OF A NUMBER"
70 PRINT "AND WE WILL SEE HOW MANY TRIES"
80 PRINT "IT TAKES YOU TO GET IT."
90 PRINT
100 C=0
110 N=INT(100*RND(0))
120 INPUT "CHOOSE A NUMBER BETWEEN 1 - 100";G
130 C=C+1
140 IF G<N THEN PRINT "TOO LOW ! ":GOTO 120
150 IF G>N THEN PRINT "TOO HIGH !":GOTO 120
160 PRINT "YOU GUESSED IT.":PRINT" IT TOOK YOU "C" TIMES."
170 INPUT "DO YOU WANT TO TRY AGAIN ";Y$
180 IF LEFT$(Y$,1)="Y" THEN GOTO 40
190 PRINT:PRINT"OK. GOOD-BY."
200 END
```

REDUCING FRACTIONS

A few simple fractions are displayed and students are asked if the fraction can be reduced, and if so, what the common divisor is.

```
20 REM REDUCING FRACTIONS
30 REM  1984, LYN SUDLOW
40 CLS
50 DATA 7/8,NO, NONE,2/4,YES,2,6/8,YES,2,1/2,NO,NONE,2/3,NO,NONE,4/12,YE
S,4,8/16,YES,8,3/9,YES,3,5/16,NO,NONE,2/2,YES,2
60 PRINT"I'LL GIVE YOU A FRACTION,"
70 PRINT"AND YOU TELL ME IF IT CAN BE"
80 PRINT"REDUCED."
90 PRINT
100 FOR X= 1 TO 10
110 READ F$,R$,D$
120 PRINT:PRINT "#";X:PRINT:PRINT F$
130 INPUT"CAN IT BE REDUCED";Y$
140 IF LEFT$(Y$,1)=LEFT$(R$,1) THEN PRINT "RIGHT!!!  ";:C=C+1
150 PRINT "THE ANSWER IS "R$
160 IF R$="NO" THEN 230
170 PRINT:PRINT "WHAT IS THE LARGEST NUMBER"
180 PRINT"THAT WILL DIVIDE INTO"
190 PRINT"BOTH THE NUMERATOR AND"
200 PRINT"THE DENOMINATOR?"
210  INPUT G$:IF G$=D$ THEN PRINT "RIGHT":ELSE PRINT"SORRY, ";
220 PRINT "THE COMMON DIVISOR IS "D$
230 NEXT X
240 PRINT:PRINT "YOU GOT";C;"CORRECT OUT OF 10"
250 INPUT"DO YOU WANT TO TRY AGAIN";Y$
260 IF LEFT$(Y$,1)="Y" THEN RESTORE:GOTO 40
270 PRINT "GOOD BYE."
280 END
```

FRACTION CONVERSION

The student may either convert from fractions to decimals or from decimals to fractions.

```
20 REM FRACTION CONVERSION
30 REM  1984, LYN SUDLOW
40 DATA .125,1/8,.5,1/2,.25,1/4,.75,3/4,.375,3/8,.0625,1/16,.625,5/8,.87
5,7/8
50 CLS
60 C=0
70 PRINT"WOULD YOU LIKE TO CONVERT"
80 PRINT"   A. DECIMALS TO FRACTIONS"
90 PRINT"      OR"
100 PRINT"   B. FRACTIONS TO DECIMALS"
110 PRINT:PRINT"CHOOSE A OR B"
120 PRINT:INPUT C$
130 IF C$="A" THEN GOTO 160
140 IF C$="B" THEN GOTO 270
150 GOTO 70
160 PRINT"AFTER EACH DECIMAL,"
170 PRINT"TYPE THE FRACTION USING"
180 PRINT"THE '/' SLASH (SUCH AS 1/2).":PRINT
190 FOR X=1 TO 8
200 READ D,F$
210 PRINT D" ";
220 INPUT G$
230 IF G$=F$ THEN PRINT "RIGHT":C=C+1:GOTO 250
240 PRINT "NO, IT IS "F$
250 PRINT:NEXT X
260 PRINT:PRINT"YOU GOT";C;"CORRECT OUT OF 8.": GOTO 370
270 PRINT"AFTER EACH FRACTION,"
280 PRINT"TYPE IN THE DECIMAL EQUIVALENT":PRINT
290 FOR X=1 TO 8
300 READ D,F$
310 PRINT F$" ";
320 INPUT G$
330 IF VAL(G$)=D THEN PRINT "RIGHT":C=C+1:GOTO 350
340 PRINT "NO, IT IS "D
350 PRINT:NEXT X
360 PRINT:PRINT"YOU GOT";C;"CORRECT OUT OF 8."
370 INPUT"DO YOU WANT TO TRY AGAIN ";Y$
380 IF LEFT$(Y$,1)="Y" THEN RESTORE:GOTO 30
390 PRINT "GOOD-BY":END
```

GROUPING VERTEBRATES

Classification of plants and animals is an important scientific concept. This program lets students group vertebrates into their five main divisions. Again, spelling must be exact.

```
20 REM GROUPING VERTEBRATES
30 REM  1984, LYN SUDLOW
40 CLS
50 DATA REPTILE,MAMMAL,FISH,BIRD,AMPHIBIAN
60 W=0:RESTORE
70 FOR X=1 TO 5:READ V$(X):NEXT X
80 PRINT"VERTEBRATE ANIMALS ARE DIVIDED"
90 PRINT"INTO FIVE MAIN GROUPS,"
100 PRINT V$(1);", ";V$(2);", ";V$(3);","
110 PRINT V$(4);", AND ";V$(5);"."
120 DATA SNAKE,LIZARD,TURTLE,CROCODILE,DINOSAUR
130 DATA CAT,DOG,WOLF,MOUSE,PERSON
140 DATA BASS,TROUT,COD,SALMON,EEL
150 DATA ROBIN,CHICKEN,CROW,BLUEJAY,WOODPECKER
160 DATA SALAMANDER,NEWT,FROG,TOAD,TADPOLE
170 FOR I=1 TO 5
180  FOR J=1 TO 5
190   READ A$(I,J)
200 NEXT J:NEXT I
210 FOR K=1 TO 10
220  LET I=RND(5):J=RND(5)
230  PRINT:PRINT"WHICH GROUP DOES THE "
240  PRINT A$(I,J);" BELONG TO";
250  INPUT G$
260  IF G$=V$(I) GOTO 380
270  IF G$=(V$(I)+"S") GOTO 380
280  IF G$=(V$(I)+"ES") GOTO 380
290  FOR X=1 TO 5
300   IF G$=V$(X) OR G$=(V$(X)+"S") GOTO 350
310  NEXT X
320  PRINT:PRINT"PLEASE TYPE ONE OF THE FOLLOWING";
330  FOR X=1 TO 5:PRINT V$(X):NEXT X
340  GOTO 230
350  W=W+1:PRINT "NO, THE "A$(I,J)" BELONGS TO THE"
360  PRINT V$(I);" GROUP.":PRINT
370  GOTO 390
380  PRINT "VERY GOOD!":PRINT
390  FOR X=1 TO 500:NEXT X
400 NEXT K
410 IF W=0 PRINT:PRINT"YOU DID FANTASTIC!!!!":END
420 IF W>0 THEN PRINT:PRINT"YOU GOT"10-W"CORRECT OUT OF 10."
430 PRINT"WOULD YOU LIKE TO DO BETTER";
440 INPUT Y$:IF LEFT$(Y$,1)="Y" THEN RESTORE:GOTO 40
450 END
```

HISTORY SEQUENCES

Students are asked to put ten important events in U.S. history in order. You can change the data lines for different events or blocks of time.

```
20 REM HISTORY
30 REM 1984, LYN SUDLOW
40 C=0:D=1:C2=0
50 CLS
60 FOR I=1 TO 10
70 READ A(I),B$(I),C$(I),D$(I)
80 NEXT I
90 FOR I=1 TO 10
100 FOR K=1 TO 10
110 PRINT B$(K);". "C$(K)
120 NEXT K
130 PRINT
140 IF C>0 THEN 160
150 PRINT"WHICH EVENT CAME FIRST";:GOTO 180
160 PRINT"THE PREVIOUS EVENT WAS ";P$
170 PRINT"WHICH EVENT CAME NEXT";
180 INPUT G$:IF ASC(G$)>74 OR ASC(G$)<65 THEN 180  ELSE C=C+1
190 P$=G$
200 FOR J=1 TO 10:IFB$(J)<>G$ THEN 240
210 IF D=A(J) THEN PRINT "CORRECT!  IN ";D$(J):PRINTC$(J):C2=C2+1:GOTO 2
50
220 PRINT"NO. IT WAS ";
230 FOR P=1 TO 10:IF A(P)=0 THEN PRINT"( "; B$(P);". ) IN "D$(P):PRINT;C
$(P):P$=B$(P) ELSE NEXT P
240 NEXT J
250 FOR L=1 TO 2000:NEXT L
260 D=D+1
270 CLS
280 NEXT I
290 PRINT:PRINT "YOU GOT "C2" CORRECT."
295 PRINT"WANT TO TRY AGAIN (Y/N)?"
300 INPUT Y$:IF Y$="Y" THEN RESTORE:GOTO 40
310 END
320 DATA 4,A,LEWIS AND CLARK IN NORTHWEST,1804
330 DATA 2,B,JAMESTOWN SETTLED, 1607
340 DATA 7,C,EMANCIPATION PROCLAMATION ,1863
350 DATA 1,D,COLUMBUS DISCOVERS AMERICA, 1492
360 DATA 6,E,U.S. DECLARES WAR ON MEXICO,1846
370 DATA 9,F,U.S. DROPS FIRST ATOMIC BOMB, 1945
380 DATA 8,G, U.S. GETS INVOLVED IN W.W.I, 1917
390 DATA 3,H,DECLARATION OF INDEPENDENCE , 1776
400 DATA 10,I,U.S. TROOPS LEAVE VIETNAM, 1973
410 DATA 5,J,BRITISH BURN WHITE HOUSE, 1814
```

PRESIDENTS

The student should enter the names of the first ten presidents of the United States. They may be entered in any order, but the spelling must be exact.

```
20 REM PRESIDENTS
30 REM 1984, LYN SUDLOW
40 C=0
50 CLS:PRINT          "HOW MANY OF THE FIRST 10 "
60 PRINT"PRESIDENTS CAN YOU NAME?"
70 PRINT:PRINT"TYPE 1ST AND LAST NAME AFTER"
80 PRINT"EACH QUESTION MARK."
90 PRINT"BE VERY CAREFUL ABOUT SPELLING!"
100 PRINT"YOU CAN ONLY USE A NAME ONCE":PRINT
110 FOR I=1 TO 10:READ P$(I),D$(I):NEXT
120 FOR I=1 TO 10
130 INPUT G$
140 FOR J=1 TO 10
150 IF G$=P$(J)THEN C=C+1:P$(J)="1":GOTO 180
160 NEXT J
170 PRINT "SORRY":GOTO 190
180 PRINT"   "D$(J)" - THAT'S "C
190 NEXT I
200 PRINT
210 IF C=10 THEN PRINT"THAT'S ABSOLUTELY GREAT!!!":GOTO 310
220 IF C>7 THEN PRINT"VERY GOOD":GOTO 230
230 PRINT:PRINT"HERE ARE THE ONES YOU MISSED:"
240 PRINT
250 FOR I=1 TO 10
260 IF P$(I)<>"1" THEN PRINT P$(I);" "D$(I)
270 NEXT I
280 PRINT
290 INPUT"WANT TO TRY AGAIN (Y/N)";Y$
300 IF Y$="Y" THEN RESTORE:GOTO 10
310 END
320 DATA GEORGE WASHINGTON,1789-1797,JOHN ADAMS,1797-1801
330 DATA THOMAS JEFFERSON,1801-1809, JAMES MADISON,1809-1817
340 DATA JAMES MONROE,1817-1825,JOHN QUINCY ADAMS,1825-1829
350 DATA ANDREW JACKSON,1829-1837,MARTIN VAN BUREN,1837-1841
360 DATA WILLIAM HENRY HARRISON,1841,JOHN TYLER,1841-1845
```

SOCIAL STUDIES INTERMEDIATE

STATES AND CAPITOLS

This program can make certain that every student can match and spell all the states and capitols. Spelling must be exact, and the states are presented only in alphabetical order (unless you scramble the data statements).

```
20 REM STATES AND CAPITOLS
30 REM  1984, LYN SUDLOW
40 CLS:PRINT"WOULD YOU LIKE TO "
50 PRINT:PRINT"A. NAME THE CAPITOLS OF STATES"
60 PRINT"   OR":PRINT"B. NAME THE STATES THAT GO"
70 PRINT"   WITH CAPITOLS"
80 PRINT:INPUT A$
90 W=0:RESTORE
100 PRINT"(TYPE 'END' TO QUIT)":PRINT:PRINT"BE CAREFUL WITH SPELLING!"
110 IF A$="A" THEN GOTO 310
120 IF A$="B" THEN GOTO 390
130 PRINT"TYPE A OR B":GOTO 80
140 DATA ALABAMA,MONTGOMERY,ALASKA,JUNEAU,ARIZONA,PHOENIX
150 DATA ARKANSAS,LITTLE ROCK,CALIFORNIA,SACRAMENTO,COLORADO,DENVER
160 DATA CONNECTICUTT,HARTFORD,DELAWARE,DOVER,FLORIDA,TALLAHASSEE
170 DATA GEORGIA,ATLANTA,HAWAII,HONOLULU,IDAHO,BOISE,ILLINOIS,SPRINGFIELD
180 DATA INDIANA,INDIANAPOLIS,IOWA,DES MOINES,KANSAS,TOPEKA
190 DATA KENTUCKY,FRANKFORT,LOUISIANA,BATON ROUGE,MAINE,AUGUSTA
200 DATA MARYLAND,ANNAPOLIS, MASSACHUSETTS,BOSTON,MICHIGAN,LANSING
210 DATA MINNESOTA,ST. PAUL,MISSISSIPPI,JACKSON,MISSOURI,JEFFERSON CITY
220 DATA MONTANA,HELENA,NEBRASKA,LINCOLN,NEVADA,CARSON CITY
230 DATA NEW HAMPSHIRE,CONCORD,NEW JERSEY,TRENTON,NEW MEXICO,SANTA FE
240 DATA NEW YORK,ALBANY,NORTH CAROLINA,RALEIGH,NORTH DAKOTA,BISMARCK
250 DATA OHIO,COLUMBUS,OKLAHOMA,OKLAHOMA CITY,OREGON,SALEM
260 DATA PENNSYLVANIA,HARRISBURG,RHODE ISLAND,PROVIDENCE
270 DATA SOUTH CAROLINA,COLUMBIA,SOUTH DAKOTA,PIERRE
280 DATA TENNESSEE,NASHVILLE,TEXAS,AUSTIN,UTAH,SALT LAKE CITY
290 DATA VERMONT,MONTPELIER,VIRGINIA,RICHMOND,WASHINGTON,OLYMPIA
300 DATA WEST VIRGINIA,CHARLESTON,WISCONSIN,MADISON,WYOMING,CHEYENNE
310 FOR I=1 TO 50
320  READ S$,C$
330  PRINT:PRINT"WHAT IS THE CAPITOL OF ":PRINT S$;:INPUT G$
340  IF G$="END" THEN 470
350  IF G$=C$ PRINT:PRINT"VERY GOOD!":FOR D=1 TO 1000:NEXT:GOTO 380
360  S2$=G$:S1$=C$:PRINT:PRINT"SORRY,"
370  W=W+1:PRINT"IT IS "C$:FOR D=1 TO 1000:NEXT D
380 NEXT I:GOTO 470
390 FOR I=1 TO 50
400  READ S$,C$
410  PRINT "WHAT STATE IS "C$" IN ?":INPUT G$
420  IF G$="END" THEN 470
430  IF G$=S$ PRINT:PRINT"YOU'VE GOT IT!":FOR D=1 TO 500:NEXT:GOTO 460
440  S1$=G$:S2$=S$:PRINT:PRINT"SORRY,"
450  W=W+1:PRINT "IT IS "S$:FOR D=1 TO 1000:NEXT D
460 NEXT I
470 PRINT:PRINT"YOU GOT";(I-W)-1;"CORRECT OUT OF";I-1
480 PRINT"DO YOU WANT TO TRY AGAIN";
490 INPUT A$:IFLEFT$(A$,1)="Y" THEN RESTORE:GOTO 40
```

BEST COPY AVAILABLE